Amoco Oil Company
200 East Randolph Drive
Post Office Box 6110A
Chicago, Illinois 60680

July 12, 1984

Certified Mail P16 2199356
Return Receipt Requested

Mr. Lawrence W. Eastep, P.E., Manager
Permit Section
Division of Land Pollution Control
Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Mr. Eastep:

Closure of RCRA Facilities on Amoco's Main Plant Site in Wood River; EPA ID No. ILD 980700967

Attached for your approval are closure plans for RCRA regulated facilities located on our main plant site in Wood River. The EPA ID number for this site is ILD 980700967. The attachment comprises: (1) narrative descriptions and cost estimate details; (2) Appendix A, a 1984 time schedule; (3) Appendix B, a 1985 time schedule; and (4) Appendix C, a description of decontamination procedures for equipment used in closure. The cleanup, dismantling, and disposal of processing equipment are not addressed by these plans.

No post-closure care plan is included because we will remove all hazardous wastes from the facilities to be closed, and the site will be left with no hazardous waste landfill, land treatment, or surface impoundment. However, groundwater monitoring wells are in place, and we propose to continue our present monitoring program until it is no longer necessary.

We request an extension of the time requirement in Section 724.213 that closure be completed within 180 days, because of the difficulty in carrying out certain closure activities during the cold winter months. We ask that this time period be extended to 12 months after approval. We would like to begin closure of all RCRA regulated facilities--excluding the south flare pit, the spray pond, and the lime bag soaking--as soon as possible after your approval of our plan. Closure of these facilities can be accomplished within 180 days, even in cold weather, but then there will probably have to be a suspension of closure activities on the south flare pit and the spray pond until the weather moderates. A 12-month closure period will provide the opportunity for a recess during the winter months and the flexibility to handle any unforeseen problems.

KM
PMM
MD —
PCM —

We would appreciate your prompt evaluation of our plan. If you require further information, please contact E. J. Sullivan at 312/856-5858.

Yours truly,

John G. Huddle
Director, Environmental Control and Planning
Mail Code 1203

EJS/dk

Attachment

RCRA Activities
USEPA, Region V

AMOCO OIL COMPANY
CHICAGO, ILLINOIS

CLOSURE PLAN NARRATIVES

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

JUNE 1984

TABLE OF CONTENTS

AMOCO OIL COMPANY

LEAD SULFIDE DUMPSTERS
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 1

FACILITY NAME: Lead Sulfide Dumpsters

FACILITY CLASSIFICATION: Container

REFINERY OPERATION: Doctor Sweetening Plant

PROCESS CODE: S01 (Container)

PROCESS DESIGN CAPACITY: 2,000 gallons (3 containers)

ESTIMATED ANNUAL QUANTITY OF WASTE: 24 tons (when in operation)

EPA HAZARDOUS WASTE NUMBER: D001 (Ignitability)
D002 (Corrosivity)
D003 (Reactivity)
D004 EP Toxicity (lead)
D008 - Lead

SITE DESCRIPTION

The dumpsters are located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The dumpsters (rectangular metallic containers) were associated with the Doctor Sweetening Plant located near the northwest corner of the site. The three containers have a capacity of approximately 2,000 gallons. The dumpsters were used to store lead sulfide waste

from the doctor sweetening process. The waste was pumped into the dumpster, the lead sulfide allowed to settle and the liquid decanted. Because of the development of a process which allowed the waste stream to be recycled, the dumpsters were never completely filled.

WASTE DESCRIPTION

The waste associated with this facillity was an alkaline solution containing lead sulfide and entrained hydrocarbon which was classified ignitable, corrosive, reactive and lead-bearing.

MOTHBALLING ACTION

The following mothballing action was implemented following suspension of refining operations. All lead sulfide was removed and containerized. The dumpsters were scrubbed with brushes/brooms and rinsed with solvent. This procedure (scrubbing/rinsing) was repeated three or four times. Rinsate from each cycle was containerized and, upon completion, manifested and conveyed, with the containerized solids and contaminated cleaning materials, by a licensed transporter to a designated facility for off-site disposal (ILWD, Inc., of Indianapolis, Indiana). The decontaminated dumpsters were then utilized for other operations at the refinery site. Mr. Charles A. Bartels, Supervisor (retired), Solid Waste Control at the Wood River Refinery directed the activity described above.

INVENTORY OF WASTES

N/A

CLOSURE NOTIFICATION

N/A

SCHEDULE FOR CLOSURE

1984

COST ESTIMATE FOR CLOSURE

$1,000 (1984 dollars)

CLOSURE ACTION

Closure will consist of certification that wastes were properly disposed of, equipment is decontaminated, and no wastes remain on site.

AMOCO OIL COMPANY

CALCIUM OXIDE BAG WATER-SOAKING (DUMPSTER)
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 2

FACILITY NAME: Calcium Oxide Bag Water-Soaking Dumpster

FACILITY CLASSIFICATION: Container

REFINERY OPERATION: Multi-Purpose Additives Plant

PROCESS CODE: T04 (Other Treatment)

PROCESS DESIGN CAPACITY: 20 cubic yards

ESTIMATED ANNUAL QUANTITY OF WASTE: 7 tons

EPA HAZARDOUS WASTE NUMBER: D003 (Reactivity)

SITE DESCRIPTION

The dumpster is located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The calcium oxide bag water-soaking dumpster (rectangular metallic container) is located near the Multi-Purpose Additives Plant at the west side of the refinery. This container has a capacity of approximately 20 cubic yards. Empty calcium oxide bags are deposited in the dumpster and then soaked by spraying

with water. Periodically, the dumpster is drained and the decontaminated bags disposed of as general refuse.

WASTE DESCRIPTION

The waste associated with this facility is spent bags (which had been filled with calcium oxide) and some calcium oxide solids not totally removed from the bags when emptied (for volume estimate see Inventory of Wastes below). Although neither paper nor calcium oxide is a hazardous substance, the combination meets the criteria for reactivity and ignitability.

CLOSURE ACTION

The following closure action is planned for this facility. Final water soaking of spent calcium oxide bags and residue will be accomplished, after which no hazardous waste will exist because of the reaction of the calcium oxide with water. Final rinse water pH will be checked to verify that it is between 2.0 and 12.5. The soaked bags will then be disposed of as general refuse and the dumpster utilized elsewhere.

INVENTORY OF WASTES

The quantity of waste to be accommodated during closure of this facility is estimated to be as follows:

WASTE	QUANTITY
Spent Calcium Oxide Bags (soaked)	20 cu. yds.

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 2050, and will require an estimated 1 day to complete.

COST ESTIMATE FOR CLOSURE

The cost of closing this facility in accordance with the above described Closure Action is estimated to be $1,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of all closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

SPENT DOCTOR SOLUTION STORAGE TANK
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 3

FACILITY NAME: Spent Doctor Solution Storage Tank

FACILITY CLASSIFICATION: Doctor Sweetening Plant

PROCESS CODE: S02 (Tank)

PROCESS DESIGN CAPACITY: 9,000 gallons

ESTIMATED ANNUAL QUANTITY OF WASTE: 216 tons (when in operation)

EPA HAZARDOUS WASTE NUMBER: D001 - (Ignitability)
D002 - (Corrosivity)
D003 - (Reactivity)
D004 - EP Toxicity (lead) D008

SITE DESCRIPTION

The Spent Doctor Solution Storage Tank (No. 588) is located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The Spent Doctor Solution Storage Tank (No. 588) is located at the Doctor Sweetening Plant in the northwest corner of the site. The doctor process "sweetens", or improves the odor of gasolines and distillate fuels. The tank is 9 feet in diameter and approximately 17 feet high, with a capacity of approximately 9,000 gallons.

The tank is used to store spent "doctor" solution which had been used to treat heater oil. The tank, and associated piping and hardware, are not currently in use, and are devoid of free liquids. However, there are solid residues which have accumulated on the inner surfaces of the tank and its appurtenances.

WASTE DESCRIPTION

The wastes associated with this facility are the solid residues which had accumulated during storage of the spent doctor solution (for volume estimate see Inventory of Wastes below). Based on the characteristics of the spent doctor solution (liquid), the residues present in the tank may be classified as corrosive and EP toxic (lead-bearing). However, prior to decontamination, samples of the residue will be tested to determine the exact chemical nature of the waste.

CLOSURE ACTION

The following closure action is planned for this facility. First, visual inspection and chemical testing will be employed to ascertain the extent and nature of contamination in hardware and piping associated with the tank. Next, manual techniques will be employed to remove the solid residue from the inner surfaces of the tank and appurtenances (where possible). The solid residue will be collected and containerized. Next, the inner surfaces of the tank and appurtenances (where possible), will be rinsed with solvents and wiped with absorptive materials. Water and a detergent will be used, if it is effective. As rinsing of the tank progresses, solvents will be collected and solidified (on-site), and then containerized along with all used absorptive materials. If water is used, it will be disposed of by treating in the Amoco waste water treatment plant. Rinsing will continue until rinsate testing confirms that decontamination is complete. Finally, any hardware or piping which cannot be decontaminated by this procedure will be disassembled and, along with the containerized solid residues, solidified rinsing solvents, and used absorptive materials, will be manifested, and conveyed by a licensed transporter to a designated facility for off-site disposal.

INVENTORY OF WASTES

The quantity of waste to be accommodated during closure of this facility is estimated to be as follows:

WASTE	QUANTITY
Solid Residues	100 gals. (dry measure)

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 1984, and will require an estimated 1 calendar week to complete.

COST ESTIMATE FOR CLOSURE

The cost of closing this facility in accordance with the above described Closure Action is estimated to be $7,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

SOUTH FLARE PIT
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 4

FACILITY NAME: South Flare Pit

FACILITY CLASSIFICATION: Surface Impoundment

REFINERY OPERATION: Multi-Purpose Additives Plant

PROCESS CODE: S04 (Surface Impoundment)

PROCESS DESIGN CAPACITY: 65,000 gallons

ESTIMATED ANNUAL QUANTITY OF WASTE: 1789 tons-D001; 73 tons-U189

EPA HAZARDOUS WASTE NUMBER: D001 (Ignitability)

SITE DESCRIPTION

The south flare pit is located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The south flare pit is located to the west of the No. 3 Spray Pond, between the pond and the railroad spur lines, in the vicinity of the south flare stack. The pit is a rectangularly shaped impoundment formed in natural soils. The impoundment has a surface

area of approximately 1,875 square feet and a depth of 4 feet. The pit impounds waste oils and sludges (from additive manufacturing operations) and water. The oils and sludges were conveyed to the pit via vacuum tank trucks. The water has accumulated in the pit as a result of precipitation and surface run-on.

WASTE DESCRIPTION

The wastes associated with this facility include free oil, bottom sludge and potentially contaminated soil (for volume estimates see Inventory of Wastes below). Available test data show that the free oil exceeds EP toxicity limits for lead and silver, and that in some areas the sludge has significant sulfide concentrations. In-situ soils immediately beneath and around the pit will be tested to determine the type and magnitude of contamination (if any).

CLOSURE ACTION

The following closure action is planned for this facility. First, free oil on the surface of the pit will be skimmed/pumped off and burned with plant fuel oil in the boilers, if possible. Otherwise, it will be solidified by chemical fixation. Then, the water beneath the free oil will be pumped into tank trucks for on-site conveyance to, and treatment at, the refinery waste water treatment plant. The sludge will then be removed and solidified for off-site disposal. The limits of contaminated soil (if any) will be determined on the basis of tests performed after sludge removal. Contaminated soil (if any), along with solidified free oil and sludge, will be manifested, and conveyed by a licensed transporter to a designated facility for off-site disposal. Native soils and/or comparable non-hazardous materials will be utilized to backfill and eliminate the impounding capability of the pit. The surface of the backfilled pit will be graded to blend with the surface contours and drainage pattern of the surrounding area. Finally, the area of disturbance will be vegetated to provide permanent protection against erosion.

INVENTORY OF WASTES

The quantities of waste(s) to be accommodated during closure of this facility are estimated to be as follows:

WASTE	QUANTITY
Free Oil (liquid)	1,200 gals.
Oil Sludge	140 cu. yds.
Contaminated Soil	140 cu. yds.

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 1985, and will require an estimated 1 calendar month to complete.

COST ESTIMATE FOR CLOSURE

The cost of closing this facility in accordance with the above described Closure Action is estimated to be $38,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of all closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

SPRAY POND
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

must inspect

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 5

FACILITY NAME: Spray Pond

FACILITY CLASSIFICAITON: Surface Impoundment

REFINERY OPERATION: Utilities Division

PROCESS CODE: T02 (Surface Impoundment)

PROCESS DESIGN CAPACITY: 75,000 gallons per day

ESTIMATED ANNUAL QUANTITY OF WASTE: 113,700 tons (when all process units are operating)

EPA HAZARDOUS WASTE NUMBER: D003 (Reactivity)

SITE DESCRIPTION

The Spray Pond is located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The Spray Pond is a recycle cooling water facility located in the southwest corner of the refinery. The water impounded here is used for cooling product streams from various process units. To cool the water after it had been used to absorb heat from the product streams,

the water is cooled by partial evaporation by spraying it into the air in the spray pond. The impoundment has a surface area of approximately 33 acres and a depth of about 8 feet. The water level in the spray pond is maintained by make-up from on-site wells, and by precipitation.

The spray pond was classed as a hazardous waste facility because it was used to treat sour waters (waters having significant concentrations of sulfides, ammonia, and phenols) from cracking and crude-oil distillation to reduce the concentrations of sulfide and phenols. Amoco chose to consider sour water a hazardous waste because of its sulfide content.

Sulfide was rapidly oxidized in the spray pond and phenol content was reduced to below 0.1 ppm in the cooling water cycling back to the process units. The water in the spray pond never had and does not now have any hazardous characteristics and only a portion of one cell in the spray pond requires closure due to a significant concentration of sulfides in the sediments impounded therein (see Waste Description below). This portion of the cell has a surface area of approximately 1.8 acres and a depth of about 8 feet and is located at the extreme northerly limit of the spray pond.

WASTE DESCRIPTON

The residual hazardous waste associated with this facility is bottom sediment having a significant sulfide content. There may also be some contaminated soil (for volume estimates see Inventory of Wastes below). In-situ soil immediately beneath the sulfidic sludge will be tested to determine if it is contaminated.

CLOSURE ACTION

The following closure action is planned for this facility. First, the zone of contamination will be more accurately defined by a comprehensive program of sludge sampling and testing. Once the extent of contamination has been defined, a dike, formed of uncontaminated native soil, will be constructed to isolate the contaminated portion of the cell. Next, the water in the cell will be pumped into an adjacent cell exposing the contaminated sludge. Following water evacuation, the sludge will be removed from the pond and containerized. Based on tests performed after sludge removal, the limits of contaminated soil (if any) will be determined. Contaminated soil (if any) will be manifested and conveyed, along with the containerized sludge, by a licensed transporter to a designated facility for off-site disposal. Finally, the dike, which had been used to isolate the contaminated portion of the cell, will be removed.

INVENTORY OF WASTES

The quantities of waste(s) to be accommodated during closure of this facility are estimated to be as follows:

WASTE	QUANTITY
Sludge	7,100 cu. yds.
Contaminated Soil	2,250 cu. yds.

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 1985, and will require an estimated 5 calendar months to complete.

COST ESTIMATE FOR CLOSURE

The cost of closing this facility in accordance with the above described Closure Action is estimated to be $440,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of all closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

DOCTOR PRECIPITATION FACILITY
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 6

FACILITY NAME: Doctor Precipitation Facility

FACILITY CLASSIFICATION: Tank

REFINERY OPERATION: Doctor Sweetening Plant

PROCESS CODE: T01 (Tank)

PROCESS DESIGN CAPACITY: 10 gallons per day

ESTIMATED ANNUAL QUANTITY OF WASTE: 216 tons (when in operation)

EPA HAZARDOUS WASTE NUMBER: D001 (Ignitability)
D002 (Corrosivity)
D003 (Reactivity)
D004 EP Toxicity (lead)

SITE DESCRIPTION

The Doctor Precipitation Facility is located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430+. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The Doctor Precipitation Facility consists of a tank (No. T-107) for dissolving sodium sulfide and a pipe to carry it to the point of reaction with spent doctor solution. The facility is located at the Doctor Sweetening Plant near the northwest corner of the site.

The doctor process "sweetens", or improves the odor of gasolines and distillate fuels. The tank is 3 feet in diameter and 4 feet long with a capacity of approximately 210 gallons. The tank is used to dissolve sodium sulfide reagent, which was used to precipitate lead from spent doctor solution. The tank, and associated piping and hardware, are not currently in use and are devoid of free liquids. However, there are solid residues which have accumulated on the inner surfaces of the tank and its appurtenances.

WASTE DESCRIPTION

The wastes associated with this facility are the solid residues which had accumulated during the storage of sodium sulfide solution (for volume estimate see Inventory of Wastes below). Based on the characteristics of the sodium sulfide solution, the residues present in the tank may be classified as reactive. However, prior to decontamination, samples of the residue will be tested to determine the exact chemical nature of the waste.

CLOSURE ACTION

The following closure action is planned for this facility. First, the tank and associated piping up to the point where contact was made with spent doctor will be washed with water until the rinsate shows no significant sulfide content and the pH is below 12.5. The rinsate will be treated in the Amoco wastewater treatment plant. Next, piping, from the point that spent doctor entered the system all the way to the point of entry into the lead sulfide storage dumpsters, will be dismantled. Any free liquid in the piping will be solidified and containerized. These containers and the piping itself will be manifested, and conveyed by a licensed transporter to a designated hazardous waste facility for off-site disposal.

INVENTORY OF WASTES

The quantity of waste to be accommodated during closure of this facility is estimated to be as follows:

WASTE	QUANTITY
Solid Residues	10 gals. (dry measure)

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 1984, and will require an estimated 1 calendar week to complete.

COST ESTIMATE FOR CLOSURE

The cost of closing this facility in accordance with the above described Closure Action is estimated to be $3,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of all closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

ALUMINUM CHLORIDE BARRELS
CLOSURE PLAN NARRATIVE - completed

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 7

FACILITY NAME: Aluminum Chloride Barrels

FACILITY CLASSIFICATION: Container

REFINERY OPERATION: Polybutene Plant

PROCESS CODE: S01 (Container)

PROCESS DESIGN CAPACITY: 55 gallons each

ESTIMATED ANNUAL QUANTITY OF WASTE: 11 tons (when in operation)

EPA HAZARDOUS WASTE NUMBER: D003 (Reactivity)

SITE DESCRIPTION

The barrels were located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430+. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The barrels were associated with the Polybutene Plant located in the north-central part of the site. These containers had a capacity of 55 gallons. The barrels were used to store off-specification aluminum chloride catalyst. Had the material met specifications it would have been used in the polymerization process which produced polybutene from butane-butylene.

WASTE DESCRIPTION

The waste associated with this facility was off-specification aluminum chloride, which was to be used as a catalyst in the polymerization process, and is classified as reactive.

MOTHBALLING ACTION

During the mothballing activities that followed the suspension of refining activities in 1981, the following action was implemented for the facility. The barrels were conveyed to the water softener solids pits via trucks. All aluminum chloride was removed from the barrels and deposited in the pits. The barrels were triple-rinsed, and all rinsate deposited in the pits. The decontaminated barrels were crushed, and disposed of as general refuse. Midwest Sanitary Service transported and disposed of the crushed barrels in their landfill in Brighton, Illinois. Mr. Charles A. Bartels, Supervisor (retired), Solid Waste Disposal at the Wood River Refinery directed the action described above.

INVENTORY OF WASTES

N/A (Not Applicable)

CLOSURE NOTIFICATION

N/A

SCHEDULE FOR CLOSURE

1984

COST ESTIMATE FOR CLOSURE

$1,000 (1984 dollars)

CLOSURE

Closure will consist of certification that the above activity did occur.

AMOCO OIL COMPANY

WATER SOFTENER SOLIDS PITS
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 8

FACILITY NAME: Water Softener Solids Pits

FACILITY CLASSIFICATION: Surface Impoundment

REFINERY OPERATION: General

PROCESS CODE: T04 (Surface Impoundment)

PROCESS DESIGN CAPACITY: 110 gallons per day

ESTIMATED ANNUAL QUANTITY OF WASTE: 11 tons

EPA HAZARDOUS WASTE NUMBER: D003 (Reactivity)

SITE DESCRIPTION

The water softener solids pits are located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430±. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The water softener solids pits are located east of the power plant in the northeasterly quadrant of the refinery. The pits are two rectangular impoundments formed in natural soils. Each impoundment has a surface area of approximately 0.40 acre and a depth of about 8 feet. Both pits are currently filled to a depth of about 4 feet. The pits are used alternately to impound solids laden blowdown from the lime-caustic softening of boiler feedwater.

The presence of water and the residual alkalinity in the water and in the solids made these pits an appropriate facility for treating off-specification, anhydrous aluminum chloride to render it non-hazardous. The water would hydrolyze the aluminum chloride and the alkalinity would neutralize the resulting acidic solution. This was done on a one-time basis when no disposer could be found for aluminum chloride.

WASTE DESCRIPTION

Only non-hazardous materials could remain following treatment of aluminum chloride in these pits. Anhydrous aluminum chloride is hazardous only because it reacts violently with water. Following this reaction, a water solution of aluminum chloride and hydrogen chloride remains. This solution could possibly have a pH of less than 2.0 unless it were neutralized. In the case of hydrolysis in this facility, neutralization would be immediate, forming calcium chloride and aluminum hydroxide, both non-hazardous materials.

CLOSURE ACTION

Closure will consist of sampling the pits and testing for pH. The characteristic of reactivity disappeared immediately upon hydrolysis.

INVENTORY OF WASTES

No hazardous waste is expected to be found in these pits.

CLOSURE NOTIFICATION

Amoco Oil Company will notify the Illinois EPA prior to the date closure activities are expected to begin.

SCHEDULE FOR CLOSURE

It is estimated that closure action for this facility will be implemented in 1984, and will require an estimated one day to complete.

COST ESTIMATE FOR CLOSURE

It is estimated that the cost of closing this facility in accordance with the above described Closure Action will be about $4,000 (1984 dollars).

CERTIFICATION OF CLOSURE

Upon completion of all closure activities for this facility, Amoco Oil Company will submit to the Illinois EPA written certification by both Amoco Oil Company and an independent registered professional engineer that the facility was closed in accordance with the specifications in the approved closure plan.

AMOCO OIL COMPANY

RAILROAD TANK CAR CONTAINING FORMALDEHYDE
CLOSURE PLAN NARRATIVE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

completed

HAZARDOUS WASTE PERMIT APPLICATION
IDENTIFICATION: SECTION III, LINE 9

FACILITY NAME: Railroad Tank Car Containing Formaldehyde

FACILITY CLASSIFICATION: Tank

REFINERY OPERATION: N/A (Not Applicable)

PROCESS CODE: S02 (Tank)

PROCESS DESIGN CAPACITY: N/A

ESTIMATED ANNUAL QUANTITY OF WASTE: One time quantity of 1,000 gallons

EPA HAZARDOUS WASTE NUMBER: U122 (Methylene Oxide)

SITE DESCRIPTION

This railroad tank car was located within the Wood River Refinery complex of Amoco Oil Company in Wood River, Illinois. The refinery lies on a floodplain along the east side of the Mississippi River some 3,000 feet from the shoreline. Ground surface throughout the site is relatively uniform, and lies at about average elevation 430+. The floodplain soils underlying the site are alluvial in origin. The texture of the near-surface soils ranges from highly plastic clays to medium sands. Bedrock at the site is estimated to lie some 150 feet beneath the surface, and is Mississippian age limestone. Historically, the refinery processed both domestic and foreign crude oil into automotive gasoline, propane, heating oils, kerosene, diesel fuels, jet fuels, asphalts and polybutene. Currently, there are no petroleum refining activities being conducted at the site.

FACILITY DESCRIPTION

The railroad tank car was conventional rolling stock equipment of 10,000 gallon capacity used for the conveyance of bulk liquids. The tank car had been kept in the rail yard located at the southwest limit of the site, and was used to store off-specification formaldehyde.

WASTE DESCRIPTION

The waste that was associated with this facility was off-specification formaldehyde which would have been used in a refinery manufacturing process (for volume estimate see Inventory of Wastes below).

MOTHBALLING ACTION

After suspension of refining activities, the following mothballing action was implemented for this facility. First, the formaldehyde was transferred from the tank car to a tank truck, and conveyed to Tank No. 279 (a waste oil tank) for temporary storage. Following removal of the formaldehyde, the tank car was decontaminated using water and open steam to cleanse the interior portions of the tank car. All rinsate was removed from the tank car and conveyed, via tank truck, to Tank No. 279 for temporary storage. Following decontamination, and an inspection to insure the car was clean, the tank car was sold to the Goldstein Company for scrap on, or about, September 8, 1981. The formaldehyde and rinsate that was delivered to Tank No. 279 would gradually have been drawn to the plant sewer and destroyed in the refinery waste water treatment plant.

INVENTORY OF WASTES

The quantity of waste that was accommodated during cleanup of this facility is estimated to be as follows:

WASTE	QUANTITY
Formaldehyde	1,000 gals.

CLOSURE NOTIFICATION

N/A

SCHEDULE FOR CLOSURE

1984

COST ESTIMATE FOR CLOSURE

$1,000 (1984 dollars)

CLOSURE ACTION

Closure will consist of certification that the above activity did occur.

AMOCO OIL COMPANY

SPENT DOCTOR SOLUTION STORAGE TANK
COST ESTIMATE FOR CLOSURE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

COST ESTIMATE FOR CLOSURE

?

$7,000 (1984 dollars)

DETAILS OF COST ESTIMATE

Based on consultation with a competent, licensed, hazardous waste treatment/disposal organization, a lump sum of $7,000 was estimated to be the cost of performing the following tasks related to closure of this facility:

1. Perform visual examination and chemical testing to ascertain extent and nature of contamination;
2. Remove and containerize solid residue from tank and appurtenances;
3. Rinse tank and appurtenances;
4. Solidify rinsate and containerize along with used absorptive materials;
5. In conjunction with (4) above, test rinsate to confirm decontamination;
6. Disassemble any hardware or piping which cannot be decontaminated by rinsing;
7. Manifest and convey dismantled piping/hardware and containerized materials to a designated hazardous waste facility for off-site disposal; and,
8. Prepare written certification that the facility was closed in accordance with the approved closure plan.

BY GWB DATE 5-27-94
CHK'D FXS DATE 6/1/94

SHEET 1 OF 1 — PAGE 2/2

SUBJECT AMOCO OIL COMPANY - WOOD RIVER REFINERY — JOB NO. —
SPENT DOCTOR SOLUTION STORAGE TANK - CLOSURE PLAN
VOLUME ESTIMATE FOR MATERIALS TO BE ACCOMMODATED DURING CLOSURE

SPENT DOCTOR SOLUTION STORAGE TANK - TANK No. 533

DIMENSIONS DIAMETER = 9 FT.
HEIGHT = 17 FT.
STORAGE VOLUME = 9,000 GAL.

INVENTORY OF WASTES

FREE LIQUID:

THERE ARE NO FREE LIQUIDS IN THE TANK OR ASSOCIATED PIPING/HARDWARE.

SOLID RESIDUE:

FOR VOLUME ESTIMATE ASSUME THAT .25" OF RESIDUE HAS BEEN DEPOSITED ON ALL INNER SURFACES OF THE TANK.

$$V = \left(\left[\frac{\pi(9^2)}{4}\right]2 + 2\pi(4.5)(17)\right)\left(.25\,in \times \frac{1\,ft^3}{12\,in \times 12\,in \times 12\,in}\right)\left(\frac{7.48\,GAL}{1\,ft^3}\right)$$

$V = 94.7$ SAY 100 GALS. (DRY MEASURE)

RECEIVED
JUL 20 1994
E.P.A. — D.L.P.C.
STATE OF ILLINOIS

AMOCO OIL COMPANY

SOUTH FLARE PIT
COST ESTIMATE FOR CLOSURE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

COST ESTIMATE FOR CLOSURE

$38,000 (1984 dollars)

DETAILS OF COST ESTIMATE

The following is an itemized list of the costs associated with tasks required to accomplish the intended closure plan:

1. Water, free oil, oil sludge and soil sampling/testing:

   estimate $5,000 lump sum — $ 5,000.00

   (cost includes collecting samples of water, free oil, oil sludge and soil and testing for pH, sulfides, EP toxicity, ignitability, etc.)

2. Water removal by use of 6,000 gal. tank truck:

   28,050 gal./6,000 gal. per load = 5 loads
   Pump/transport 5 loads/day

   est. 8 hr. @ $65/hr. — $ 520.00

3. Chemically fix free oil and oil sludge (maximum bulking of 30 percent):

   est. 37,986 gals. @ $.15/gal. — $ 5,697.90

4. Load solidified material and contaminated soil:

   est. 328 cu. yds. @ $1.00/cu. yd. — $ 328.00

5. Transport to hazardous waste disposal facility (HWDF) on 20 cu. yd. capacity trucks:

   328 cu. yds./20 cu. yds. per load = 17 loads
   est. 17 loads @ $616.50/load — $10,480.50

6. Landfill disposal at HWDF:

   est. 328 cu. yds. @ $40/cu. yd. — $13,120.00

7. Remedial site work:

Transport, place, compact soil material;	
est. 426 cu. yds. @ $4.30/cu. yd.	$ 1,831.80
Seeding;	
est. 475 sq. yds. @ $.31/sq. yd.	$ 150.00

8. Certification:

$1,000 lump sum	$ 1,000.00
(cost for preparation of written certification that the facility was closed in accordance with the approved closure plan)	

TOTAL	$38,128.20
SAY	$38,000.00

BY GWB DATE 5-29-84
CHK'D FXD DATE 6/1/84

SHEET 1 OF 1 — 3/3 PAGE

SUBJECT AMOCO OIL COMPANY - WOOD RIVER REFINERY JOB NO. —
SOUTH FLARE PIT - CLOSURE PLAN
VOLUME ESTIMATE FOR MATERIALS TO BE ACCOMMODATED DURING CLOSURE

SOUTH FLARE PIT

PLAN DIMENSIONS OF PIT:

APPROX. 25 FT. × 75 FT = 1875 FT²

POND CROSS SECTION (APPROX.):

FREE OIL	1 INCH
WATER	2 FT.
OIL SLUDGE	2 FT.
CONTAMINATED SOIL	2 FT.

VOLUME OF MATERIALS

FREE OIL $(1875\ FT^2)(1''/12\ IN./FT)(7.48\ GAL/FT^3) = 1170\ GAL$

WATER $(1875\ FT^2)(2\ FT)(7.48\ GAL/FT^3) = 28{,}050\ GAL.$

OIL SLUDGE 28,050 GAL.

CONTAMINATED SOIL 28,050 GAL. OR 140 YD^3

JUL 30 1984

E.P.A. — D.L.P.C.

AMOCO OIL COMPANY

SPRAY POND
COST ESTIMATE FOR CLOSURE

WOOD RIVER REFINERY
WOOD RIVER, ILLINOIS

COST ESTIMATE FOR CLOSURE

$440,000.00 (1984 dollars)

DETAILS OF COST ESTIMATE

1.	Water, sludge, and soil sampling and testing:	
	Estimate $5,700.00 lump sum.	$ 5,700.00
	(Cost includes collecting samples and testing for sulfides, EP Toxicity, corrosivity, reactivity, pH, and cyanide.)	
2.	Construct earthen dike to isolate contaminated zone of pond:	
	Estimate 356 cu. yds. at $4.20/cu. yd.	1,495.20
3.	Remove water from isolated portion of pond (2,681,500 gals. total):	
	Use 1,000 GPM pump (plus crew) Est. 3 days at $405.00/day	1,215.00
4.	Desludge pond, excavate soil. (117 days at $500.00/day)	58,500.00
5.	Container rent, 117 x $10.00 =	1,170.00
	(4 rolloff boxes, 20 cu. yds. each at $2.50/day)	

6.	Disposal costs to hazardous waste landfill (9,300 cu. yds. at $32.00/yd.)	$297,600.00
7.	State tax. (9,300 cu. yds. at $6.06/cu. yd.)	56,358.00
8.	Federal tax. ($2.13/dry ton; estimate 20% water)	15,847.20
9.	Certification.	
	$1,000.00 lump sum	1,000.00
	(Cost for preparation of written certification that the facility was closed in accordance with the approved closure plan.)	
	TOTAL	$438,885.40
	SAY	$440,000.00

SUBJECT AMOCO OIL COMPANY - WOOD RIVER REFINERY JOB NO. —
SPRAY POND - CLOSURE PLAN
VOLUME ESTIMATE FOR MATERIALS TO BE ACCOMMODATED DURING CLOSURE

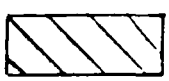
SPRAY POND

THE AREA TO BE CONSIDERED IS INDICATED ON FIGURE 1 FOLLOWING THESE PAGES. FROM DAMES AND MOORE REPORTS IT CAN BE ESTIMATED THAT 3' OF SLUDGE EXISTS IN THIS PORTION OF THE POND AND THAT ALL CONTAINMENT DIKES ARE CAPABLE OF IMPOUNDING TO AN 8' DEPTH.

QUANTITIES:

PLAN DIMENSION: .47in², .48in² → .48in² @ 1" = 400'

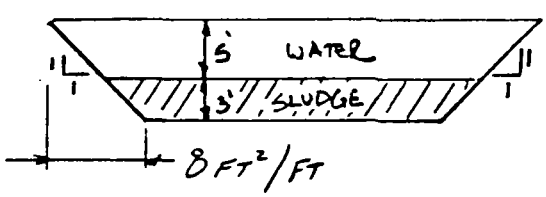
A = 76,800 FT²



DENOTES MEASURED AREA

ASSUME SIDE SLOPES OF DIKES @ 1V:1H

SO BOTTOM AREA WOULD BE:



PERIM. = 5.1, 5.1 → 5.1in

ℓ = (5.1)(400) = 2040'

$$V_T = \frac{[76800 + (76800 - 2040 \times 8)]}{2}(8)(7.48)$$

V_T = 4,107,418 GAL.

WATER:

$$V_W = \frac{[76,800 + (76,800 - 2040 \times 5)]}{2}(5)(7.48)$$

V_W = 2,681,580 GAL.

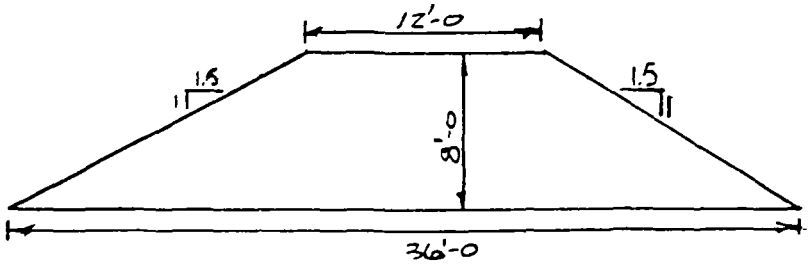
SLUDGE: $V_S = V_T - V_W$ = 1,425,838 GAL OR 7060 YD³

NOTE: THE EXACT, OR MORE DEFINITIVE, AREAL EXTENT OF CONTAMINATED SLUDGE WILL BE DETERMINED BY A SLUDGE SAMPLING AND TESTING PROGRAM. SOIL BENEATH THE SLUDGE WILL ALSO BE SAMPLED.

SUBJECT AMOCO OIL COMPANY - WOOD RIVER REFINERY JOB NO. -
SPRAY POND - CLOSURE PLAN
VOLUME ESTIMATE FOR MATERIALS TO BE ACCOMMODATED DURING CLOSURE

SPRAY POND (CONTINUED)

VOLUME OF DIKE USED TO ISOLATE CONTAMINATED PORTION OF NORTHERLY CELL:



$$Vol = \left(\frac{12+36}{2}\right)(8\ Ft.)(50\ Ft\ LENGTH)(1/27)$$

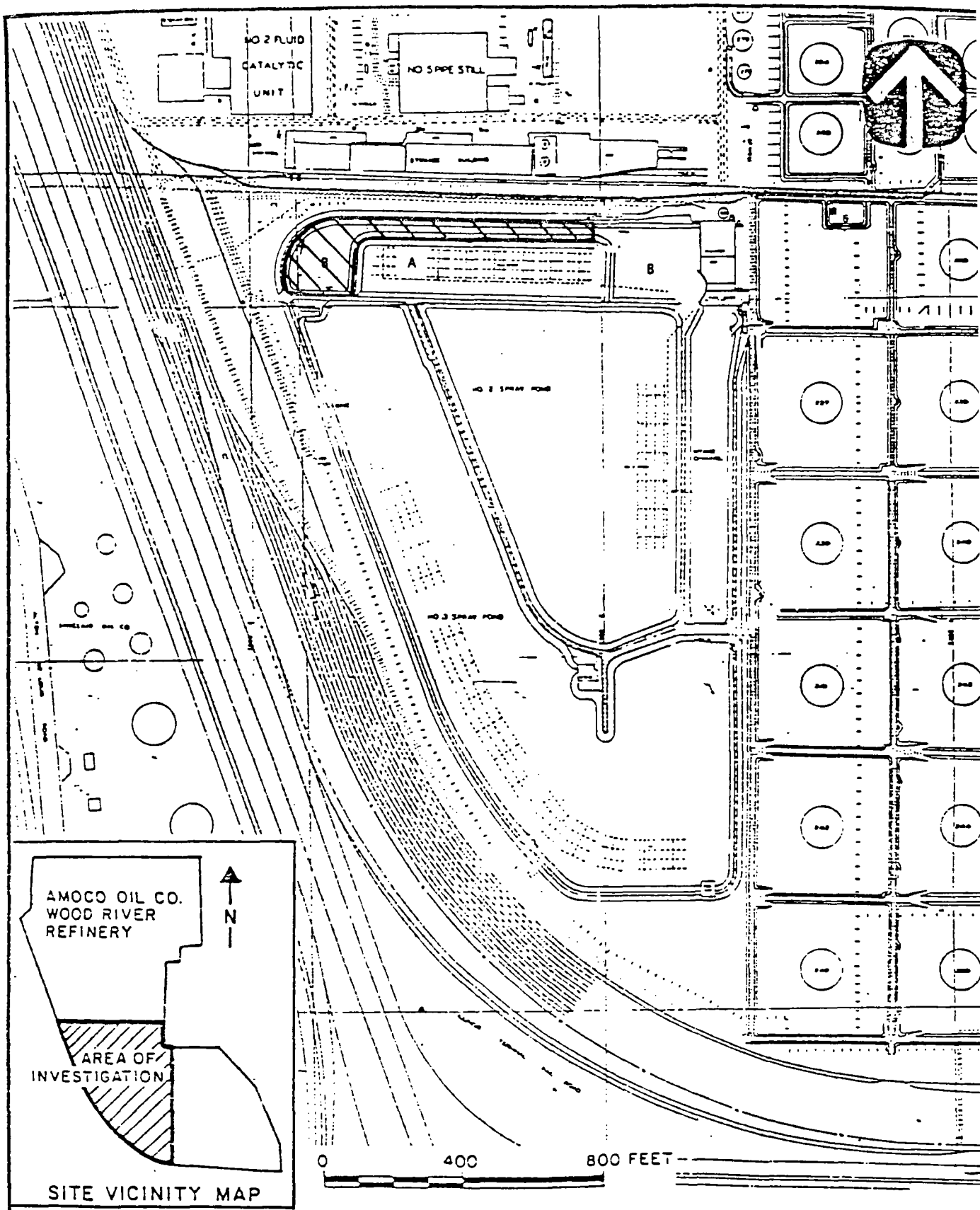
$$Vol = 356\ YD^3$$

CONTAMINATED SOIL

ASSUME THAT CONTAMINANTS HAVE PENETRATED 1 FOOT INTO THE NATURAL SOILS BENEATH THE BOTTOM AREA OF THE POND:

$$Vol. = [76,000 - 2040(8)]\ (1/27)$$

$$\underline{Vol = 2240\ YD^3}$$



BASE MAP REFERENCE:
COMPILED FROM DRAWING PROVIDED BY AMOCO OIL COMPANY, DATED JANUARY 1981.

AMOCO OIL COMPANY
WOOD RIVER REFINERY

FIGURE 1 - LOCATION MAP
SPRAY POND CONTAMINATED AREA
(APPROXIMATE LIMITS)

BY [illegible] DATE 5-29-84		SHEET 1 OF 1
CHKD. BY KS DATE 6/1/84		

Amoco Oil Company [illegible] Refinery — JOB NO. —

Doctor Precipitat[illegible] Fa[illegible] Closure Plan

Volume Estimate [illegible] (to be accomplished during clos[illegible])

Doctor Precipitat[illegible] [illegible] Tank No. —.107)

DIMENSIONS Diameter = 3 ft.

Length = 4 ft.

Storage Volume = 210 gals.

INVENTORY OF WASTES

FREE LIQUID:

THERE ARE NO FREE LIQUIDS IN THE TANK AND IT IS ANTICIPATED THAT NO FREE LIQUIDS EXIST IN ASSOCIATED PIPING/HARDWARE

SOLID RESIDUE:

FOR VOLUME ESTIMATE ASSUME THAT .25" OF RESIDUE HAS BEEN DEPOSITED ON ALL WATER SURFACES OF THE TANK.

$$V = \left(\left[\frac{\pi(3)^2}{4}\right]2 + 2\pi(1.5)(4)\right)\left(\frac{.25\,in}{12\,in/ft}\right)\left(\frac{7.48\,gal}{ft^3}\right)$$

V = 8.08 SAY 10 GALS. (DRY MEASURE)

ANY

AL CH BARRELS
CO MA CLOSURE

RIV NERY
VE NOIS

STIMATE FOR CLOSUR

,000 (1984 dollars)

S OF COST ESTIMATE

Mothballing has already been implemented for this facility in
Therefore, costs for closure will be related to the time
ed for preparation of written certification that the
lling activity did occur.